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Writer's Direct Dial Number

August 1, 1980
TLL 374

TMI Program Office
Attn: Mr. John T. Collins, Deputy Director
U. S. Nuclear Regulatory Commission
c/o Three Mile Island Nuclear Station
Middletown, Pennsylvania 17057

Dear Sir:

Three Mile Island Nuclear Station, Unit II (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Submerged Demineralizer System Technical Evaluation Report

Our letter TLL 283, dated July 9, 1980, transmitted our responses to your comments concerning the subject document. These responses indicated that we would provide a copy of the SDS system description document for your review on or about July 15, 1980. Our review of that document is still in progress; we anticipate submittal of that document to you on or about August 15, 1980. We do believe, however, that the Technical Evaluation Report contains sufficiently detailed information concerning the system description that your review of the system is not impeded.

Enclosed, please find our responses to your specific comment #11. This submittal is made to comply with our commitment in our response to comments letter (TLL 283).

Your specific comment #16 requested information that requires our transmittal of the ORNL final report to you. We have received from ORNL a draft copy of their final report. Pending our review and comment generation, the ORNL final report submittal date of August, 1980, is questionable. Should this submittal date change, we will inform you.

Sincerely,

/s/ G. K. Hovey

G. K. Hovey
Director, TMI-II

GKH:LJL:dad

Enclosure

cc: [redacted]

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Specific Comments

Question 11

Provide estimates of the expected occupational exposures from the processing of sump and RCS water, and handling of all generated solid wastes, including filters. Provide the bases for your estimates.

Answer

A preliminary estimate of the expected occupational exposures as a result of the primary operational functions associated with SDS operation has been made. Although system operating procedures are in the draft stage of development, the required primary operational functions have been defined.

Specific activities covered by this estimate are as follows:

1. Feed Tank Fill - including prefilter and final filter changeout and high rad filter sampling.

2. Single Train Zeolite Ion Exchange Operation - including high rad feed sampling, intermediate sampling and ion exchange changeout with spent units stored in the fuel pool.

3. Routine Operations and Surveillance

4. Maintenance

This estimate does not include vessel removal and cask handling.

Feed Tank Fill

Assumptions:

1. 50,000 gallons transferred to feed tank

2. 1 prefilter and 4 final filters expended during feed tank fill

3. 4 start up and shutdown cycles during feed tank fill

4. 13 high rad filter samples during feed tank fill

5. Fill rate of 50 gpm

6. Time per evolution $\sim$ 16 hours

High Rad Filter Sampling - 0.325 person-rem.

Valve Lineups - 0.040 person-rem

Filter Changeout to Fuel Pool Storage - 0.030 person-rem

Ion Exchanger Operation

Assumptions:

1. 3-15,000 gallon batches from feed tank
2. Expend 1 resin bed each batch
3. After removal of "A" bed, "B" bed moved to "A" position, "C" bed moved to "B" position and new bed becomes "C"
4. 3 start up and shutdown cycles
5. 39 high rad feed samples
6. 39 intermediate samples
7. Feed rate of 5 gpm
8. Time for evolution ≈ 160 hours

High Rad Feed Sampling - 0.975 person-rem

Intermediate Sampling - 0.156 person-rem

Valve Lineups - 0.030 person-rem

Vessel Changeout - 0.024 person-rem

Operation and Surveillance

Assumptions:

1. 12 operators and 8 chemists and 4 H/P technicians working (6 operators, 4 chemists, and 2 H/P techs per 12 hour shift)
2. This section to cover all exposure received which is not covered in specific categories.
3. Total time for evolution ≈ 194 hours
4. General area radiation levels will average 1 to 2 mrem/hour.

Low estimate (corresponding to general area radiation level of 1 mr/hr) is 2.328 person-rem.

High estimate (corresponding to general radiation level of 2 mr/hr) is 4.656 person-rem.

Maintenance

Assumptions:

1. Maintenance will be 10% of run time or 18 hours
2. Maintenance teams will consist of 3 Men (2 crew, 1 H/P)

3. Maintenance confined to pump, valve and instrument.

4. Average WB dose rate during maintenance ~ 50 mrem/hour.

Total occupational exposure attributable to maintenance is 2.700 person-rem.